

TO: James L. App, City Manager
FROM: Joseph M. Deakin, Public Works Director
SUBJECT: 21st Street Reservoir
DATE: November 4, 2003

NEEDS: For the City Council to consider rejecting a bid received to replace the roof of the 21st Street Reservoir.

FACTS:

1. The 21st Street Reservoir was built in 1925. The original roof was replaced with a new roof consisting of wood trusses and a continuous exterior stem wall, that roof exists today. In October 1968, a project added pipe column supports at the center of the existing roof trusses to correct the sagging roof and repaired cracks in both the roof and the floor of the reservoir.
2. In early 2001, the City repaired damaged truss top chord elements at two locations. The existing timber truss roof appears to be structurally compromised and due for replacement.
3. The reservoir southwest corner started leaking in the late 1980's, with leaked water apparent whenever the reservoir exceeded 18 feet full. This seepage conditions continues to be observed. Water was also noticed under the liner as early as the one-year warranty inspection, when the installer attributed this to condensation. Furthermore, during reservoir liner installation, the installer documented that the 2-3 inches of the concrete stem wall were "dirt" and the concrete was "soft with no indications of aggregate."
4. On June 18, 2002, the City Council authorized staff to engage the services of Boyle Engineering to prepare the construction documents to replace the damaged roof of the reservoir. Construction bids were solicited, and at the bid opening on September 25, 2003, only one bid was received from Cushman Contracting Corporation in the amount of \$3,787,000 (the budget is \$1,400,000).

**ANALYSIS
AND**

CONCLUSION: Staff is concerned that there are unknown structural integrity issues with the 21st Street Reservoir. The initial structural concerns focused on the obviously poor condition of the roof structure; however, upon further observance, additional investigation is needed for the entire site and structure. An investigation and evaluation study is provided for Council consideration so staff may present options for repairs that recognize the whole condition of the reservoir.

Locating the leak(s) and determining the structural integrity of the reinforced concrete stem wall will require several initial investigative steps, including a dive inspection, geotechnical evaluation, and structural element analysis.

Dive Services

Boyle Engineering recommends using DIVE/CORR, Inc. to locate possible existing leaks using dye and document findings with appropriate photography. DIVE/CORR may either make simple repair(s) in place, or report the problem, so the reservoir can be drained to repair the HDPE liner. (Estimated cost: \$2500).

Geotechnical Services

A geotechnical expert could assist with a water level monitoring program at various locations outside the reservoir. Standing water levels can be monitored and compared to the stem wall elevations to determine reservoir water levels versus seepage occurrence. The monitoring wells could also monitor liner repair effectiveness. The geotechnical engineer could also provide the City with an opinion regarding the seepage water, specifically if it is water seeping from the reservoir (liner leak), or if it could be groundwater.

The geotechnical engineer could prepare a soils report to determine and document depth to bedrock, bearing capacity, friction factor, lateral soil pressure, passive pressure, coefficient of friction, seismic zone factors, and seismic lateral loading. These are key data points needed for the structural evaluation of the reservoir.

Structural Investigation

The existing reinforced concrete stem wall should be cored in at least 6 different locations. The cores should be 2 inches in diameter and penetrate at least half the wall width. If the cores can be removed in one piece, they should be used for subsequent compression tests. A more detailed scope of work from the geotechnical engineer is attached. Estimated cost for this work is \$16,300.

Roof Repair

In light of the conclusion that the whole tank needs to be evaluated for integrity, it seems premature to repair the roof at this time. Furthermore, the one construction bid received significantly exceeds the adopted budget. The City Council may reject this bid, and direct staff to re-evaluate the design. The redesign effort would evaluate more cost-effective roof solutions, while incorporating all other evaluation elements (liner, geotechnical and basic structure). It is possible that the roof may not be the top priority, and if it is determined to be, there are likely more cost-effective solutions to replace the reservoir cover besides the current design.

POLICY

REFERENCE: Adopted Capital Improvement Program

FISCAL

IMPACT: Option A provides the option to avoid an immediate unbudgeted shortfall of \$2,300,000, and redirects budgeted CIP funds for the roof repair into an evaluation of the entire reservoir.

OPTIONS:

- a.
 - (1) Adopt Resolution 03-xx rejecting the bid received from Cushman Contracting Corporation to replace the roof at the 21st Street Reservoir.
 - (2) Engage the services of DIVE/CORR to perform an underwater inspection of the reservoir for a not-to-exceed fee of \$2500 and engage the services of Fugro Geotechnical to perform geotechnical investigative work in accordance to the attached scope of work for a not-to-exceed fee of \$20,000.
 - (3) Direct staff to report back to Council with evaluation findings and rehabilitation options.
- b. Amend, modify or reject the above option.

Attachments (1)

- 1) Resolution

RESOLUTION NO. 03-

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF PASO ROBLES
REJECTING THE BID RECEIVED FOR THE ROOF REPAIR AT THE 21ST STREET RESERVOIR

WHEREAS, on June 18, 2002, the City Council authorized staff to engage the services of Boyle Engineering to prepare the construction documents to replace the damaged roof of the 21st Street reservoir. Construction bids were solicited, and at the bid opening on September 25, 2003, only one bid was received from Cushman Contracting Corporation in the amount of \$3,787,000 (the budget is \$1,400,000).

WHEREAS, there are additional unknown structural integrity issues within the entire reservoir; and

WHEREAS, locating the leak(s) and determining the structural integrity of the reinforced concrete stem wall will require several initial investigative steps, including a dive inspection, geotechnical evaluation, and structural element analysis.

THEREFORE, BE IT RESOLVED AS FOLLOWS:

SECTION 1. The City Council of the City of El Paso de Robles does hereby reject the bid received from Cushman Contracting Corporation to replace the roof at the 21st Street Reservoir, and directs staff to reconsider the roof replacement project.

SECTION 2. The City Council of the City of El Paso de Robles does hereby approve contracting with DIVE/CORR to perform an underwater reservoir inspection for a not-to-exceed fee of \$2500.

SECTION 3. The City Council of the City of El Paso de Robles does hereby approve contracting with Fugro Geotechnical to perform geotechnical investigative work in accordance to the attached scope of work for a not-to-exceed fee of \$20,000

PASSED AND ADOPTED by the City Council of the City of Paso Robles this 4th day of November 2003 by the following vote:

AYES:

NOES:

ABSTAIN:

ABSENT:

Frank R. Mecham, Mayor

ATTEST:

Sharilyn M. Ryan, Deputy City Clerk